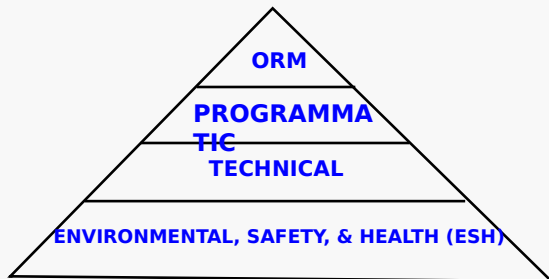


RISK MANAGEMENT IERARCHY



❖ Operational Risk Management (ORM)

- OPNAVINST 3500.39 MCO 3500.27
- Risk of completing an operational mission
- Includes availability of resources (e.g., system) etc.

❖ Programmatic Risk Management

- DOD Regulation 5000.2R, Section 3.3.3
- Risks associated with the system/program
- Includes Cost, Schedule, & Performance

❖ Technical Risk Management

- NAVSO P-3686
- Risks associated with system's technical issues
- Drives all programmatic risks

❖ ESH Risk Management

- DOD Regulation 5000.2R, Sections 3.3.7 & 4.3.7
- Risks include all E, S & H hazards of the system

ESH RISK MANAGEMENT "Players"

PM -Overall responsibility for managing ESH risks

PM's ESH Manager -Technical lead for managing ESH risks

ESHWG -Assigns ESH hazard levels & tracks residual ESH hazards

IPTs -Integrates ESH risk issues into systems engineering process

Contractor -Includes ESH risk issues into overall technical risk

PEO -Accepts "Serious" ESH Hazards (see inside panels)

ASN(RDA) -Accepts "High" ESH Hazards (see inside panels)

Contractor's ultimate responsibility of ESH hazards to the impact

PM TIPS FOR RISK ANAGEMENT

❖ Understand your responsibilities

- Overall management of ESH risks
- Obtain acceptance for high & serious ESH risks
- Invite Fleet's reps to participate in ESH issues

❖ Leverage ESH risk management techniques

- Assign an ESH Manager - (your technical lead)
- Establish an ESHWG - (your "ESH experts")
- Integrate ESH into overall risk management
- Include ESH risk management in your contract
- Use "standard" concepts (see inner panels)
 - ESH Hazards Definitions & Categories
 - ESH Hazards Acceptance Matrix
- Integrate key ESH topics into your ESH Risk Management efforts:
 - NEPA
 - Environmental Compliance
 - System Safety & Health
 - Hazardous Materials
 - Pollution Prevention

❖ Influence your PESHE based on ESH Risks

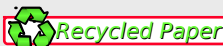
- Describe your strategy to reduce ESH risks
- Address ESH Risk Management responsibilities
- Describe how you will track ESH risks

References:

DOD 5000.2-R
SECNAVINST 5000.2B
OPNAVINST 3500.39 MCO 3500.27
NAVSO P-3686

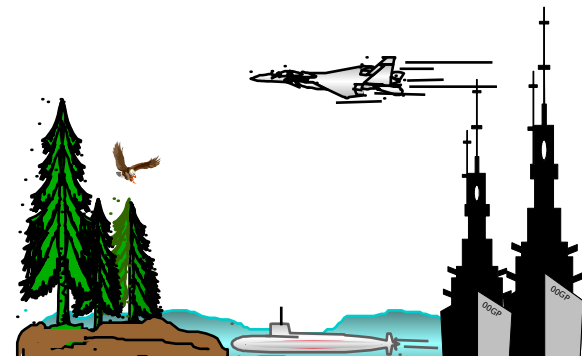
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DEPARTMENT OF
THE NAVY

ENVIRONMENTAL
SAFETY &
HEALTH
RISK MANAGEMENT



ASN(RD&A)
Acquisition and Business
Management

NAVSO P-3686 "Top Eleven Ways to Manage Technical Risk"

HOW ESH RISK MANAGEMENT APPLIES TO EACH

- Choose an Approach*
-Use the severity versus probability approach
- Assign Accountability*
-PM should assign ESH Manager as POC
- Put Risk Management in the Contract*
-Include ESH Risk Management in contracts
- Mandate Training*
-Check with ASN(RDA), SYSCOMs, & CNO N45 for availability of ESH training.
- Practice Engineering Fundamentals*
-Integrate ESH hazards definitions & categories
- Understand COTS/NDI Applications*
-Determine ESH hazards for COTS/NDI products
- Establish Key Software Measures*
-Include Software Safety in ESH Risk Management
- Assess, Mitigate, Report*
-Assess using ESH Hazards Definitions & Categories
-Mitigate highest hazards first
-Report residual high & serious ESH hazards
-Obtain approval using Hazards Acceptance Matrix
- Use Independent Assessors*
-Weapon System Explosive Safety Review Board

ASN(RDA) ABM

HAZARDS DEFINITIONS & CATEGORIES

Environmental Hazards	
Severity	Probability of Occurrence
Definition: Hazards in terms of damage to the environment and violation of law.	Definition: The probability of environmental impacts over the life of the system.
I <u>Catastrophic</u> Irreversible environmental damage in violation of law.	A <u>Likely</u> Fleet of systems Continuously, $P>1$ Individual system Frequently, $1>P>10^{-1}$
II <u>Critical</u> Reversible environmental damage in violation of law.	B <u>Probable</u> Fleet of systems Continuously, $1>P>10^{-1}$ Individual system Several times, $10^{-1}>P>10^{-3}$
III <u>Marginal</u> Reversible environmental damage with no violation of law.	C <u>Occasional</u> Fleet of systems Several times, $10^{-1}>P>10^{-3}$ Individual system At some time, $10^{-3}>P>10^{-6}$
IV <u>Negligible</u> Insignificant environmental damage.	D <u>Remote</u> Fleet of systems At some time, $10^{-3}>P>10^{-6}$ Individual system Unlikely, $10^{-6}>P$

Safety Hazards	
Severity	Probability of Occurrence
Definition: Hazards in terms of system damage/loss or personnel injury/death.	Definition: The probability of safety impacts over the life of the system.
I <u>Catastrophic</u> Loss of system Death	A <u>Likely</u> Fleet of systems Continuously, $P>1$ Individual system Frequently, $1>P>10^{-1}$
II <u>Critical</u> Major system damage Permanent or disabling injury/illness	B <u>Probable</u> Fleet of systems Continuously, $1>P>10^{-1}$ Individual system Several times, $10^{-1}>P>10^{-3}$
III <u>Marginal</u> Minor system damage Temporary or non-disabling injury/illness	C <u>Occasional</u> Fleet of systems Several times, $10^{-1}>P>10^{-3}$ Individual system At some time, $10^{-3}>P>10^{-6}$
IV <u>Negligible</u> Minimal or insignificant system damage Minimal or insignificant threat to personnel	D <u>Remote</u> Fleet of systems At some time, $10^{-3}>P>10^{-6}$ Individual system Unlikely, $10^{-6}>P$

Health Hazards	
Severity	Probability of Occurrence
Definition: Hazards in terms of dosage of a substance, or induced loads*.	Definition: The probability of health impacts over the life of the system.
I <u>Catastrophic</u> Substance dosage or induced loads leading to death	A <u>Likely</u> Fleet of systems Continuously, $P>1$ Individual system Frequently, $1>P>10^{-1}$
II <u>Critical</u> Dosage or loads leading to permanent or disabling injury/illness	B <u>Probable</u> Fleet of systems Continuously, $1>P>10^{-1}$ Individual system Several times, $10^{-1}>P>10^{-3}$
III <u>Marginal</u> Dosage or loads leading to temporary or non-disabling injury/illness	C <u>Occasional</u> Fleet of systems Several times, $10^{-1}>P>10^{-3}$ Individual system At some time, $10^{-3}>P>10^{-6}$
IV <u>Negligible</u> Dosage or loads with minimal or insignificant threat to personnel	D <u>Remote</u> Fleet of systems At some time, $10^{-3}>P>10^{-6}$ Individual system Unlikely, $10^{-6}>P$

*Dosage (i.e., concentrations vs. times) & induced loads (e.g., temperature, physical, electrical)

RESPONSIBILITIES from SECNAVINST 5000.2B

ASN(RD&A)

- Accept high risk hazards.

PEOs/DRPMs/COMSYSCOM

- Accept serious risk hazards.

Program Managers

- Integrate ESH risk management into the
- technical risk management process. Ensure trade studies include ESH
- risk management considerations. Include ESH risk management in the
- contract requirements. Ensure ESH hazards are accepted at the

correct approval authority level.

HAZARDS ACCEPTANCE MATRIX

		Probability of Occurrence			
		A	B	C	D
Severity	I	High*	High*	Serious**	Serious**
	II	High*	High*	Serious**	Low
	III	High*	Serious**	Low	Low
	IV	Serious**	Serious**	Low	Low

* High hazards must be accepted by ASN(RDA)

**Serious hazards must be accepted at the PEO level.